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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/575,843

04/13/2006

Martin Volland

1281000235US

2215

23416

7590

03/13/2009

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EXAMINER

CHUNG, SUSANNAH LEE

ART UNIT

PAPER NUMBER

1626

MAIL DATE

DELIVERY MODE

03/13/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,843	<b>Applicant(s)</b> VOLLAND ET AL.	
	<b>Examiner</b> SUSANNAH CHUNG	<b>Art Unit</b> 1626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/13/06</u>   | 6) <input type="checkbox"/> Other: _____                          |

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### **DETAILED ACTION**

Claims 1-7 are pending in the instant application.

#### ***Priority***

This application is a 371 of PCT/EP04/11530, filed 10/14/2004.

Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d) by application no. 103 49 482.0 and 10 2004 041 144.1 filed in the German Patent Office on 10/21/2003 and 08/24/2004, which papers have been placed of record in the file. The application names an inventor or inventors named in the prior application.

#### ***Information Disclosure Statement***

The information disclosure statement (IDS), filed on 4/13/06 has been considered. Please refer to Applicant's copy of the 1449 submitted herewith.

#### ***Response to Election/Restrictions***

Applicant's election with traverse of Group I in the reply filed on 2/16/2009 is acknowledged. Applicants arguments have been considered and are found persuasive. The restriction requirement is withdrawn and all claims will be examined for patentability.

#### ***Claim Rejections - 35 USC § 112, 1<sup>st</sup> paragraph***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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Claims 1-4 and 7 are rejected under 35 U.S.C. 112, first paragraph, because the specification although enabling for a process for preparing aldehydes, wherein the ligand is a compound of formula (I) or (Ia), it is not enabled for a process, wherein the ligand is undefined, i.e. no formula or definition of a particular ligand in claims 1-4 and 7. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The specification provides support for the ligands of claims 5 and 6, but not the use of all ligands without limitation, i.e. no structure or definition in claims 1-4 and 7.

As stated in MPEP 2164.01(a), "there are many factors to be considered when determining whether there is sufficient evidence to support a determination that a disclosure does not satisfy the enablement requirement and whether any necessary experimentation is "undue."

The factors to be considered when determining whether a disclosure meets the enablement requirement of 35 USC 112, first paragraph, were described in In re Wands, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988) as:

1. the nature of the invention;
2. the breadth of the claims;
3. the state of the prior art;
4. the relative skill of those in the art;
5. the predictability or unpredictability of the art;
6. the amount of direction or guidance presented (by the inventor);

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7. the presence or absence of working examples; and
8. the quantity of experimentation necessary (to make and/or use the invention).

The eight Wands factors are applied to Claims 1-4 and 7 of the present invention below:

*(1) The Nature of the Invention*

The nature of the invention relates to a method for the continuous production of aldehydes comprising between 5 and 21 carbon atoms, by the isomerising hydroformylation in a homogenous phase of olefin compositions comprising between 4 and 20 carbon atoms and containing .alpha.-olefins and olefins with internal double bonds, by means of a synthesis gas, in the presence of a homogeneous rhodium catalyst that is complexed with an organophosphorus ligand containing oxygen atoms and/or nitrogen atoms and a free ligand.

*(2) The Breadth of the claims*

The breadth of claims 1-4 and 7 encompass products, wherein there is no structure for the final product because there is no structure for the ligand used in the process. The applicable rule for interpreting the claims is that “each claim must be separately analyzed and given its broadest reasonable interpretation in light of and consistent with the written description.” See MPEP 2163(II)(1), citing In re Morris, 127 F.3d 1048, 1053-1054; 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). In view of this rule, this process may reasonably be interpreted to encompass an infinite number of combinations that read on the prior art. See 103 rejection below.

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*(3) The state of the prior art*

The continuous production of aldehydes by hydroformylation in a homogenous phase of olefin compositions, by means of a synthesis gas, in the presence of a homogeneous rhodium catalyst that is complexed with an organophosphorus ligand containing oxygen atoms and/or nitrogen atoms and a free ligand is known in the art. See WO 02/068371 (Bohnen et al.).

*(4) The relative skill of those in the art*

The level of skill in the art (pharmaceutical chemists, physicians) would be high.

*(5) The predictability or unpredictability of the art*

The process claimed in the instant application, where the ligand is undefined include an extremely large scope of the potential products, which renders the prior art unpredictable for the process as claimed.

*(6) The amount of direction or guidance presented (by the inventor)*

The specification in the present invention discloses specific ligands and claims 5 and 6 define those ligands. The process of using these ligands is predictable and one of ordinary skill in the art would know how to use the process with these ligands.

*(7) The presence or absence of working examples*

The specification has no working examples of where the ligand is anything but the compounds of formula (I) and (Ia).

*(8) The quantity of experimentation necessary (to make and/or use the invention)*

Given the absence of direction or guidance (or working examples) in the specification for any of the extremely large number of products that would be

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encompassed by the description ligand, it would cause a skilled artisan an undue amount of experimentation to determine which product the process of making was describing. Also, a skilled artisan would not be able to predict if the instantly claimed process would work. Therefore, to overcome this rejection, the scope of the ligand should be defined to those compounds with support in the specification. For example, the compounds of formula (I) and (Ia).

***Claim Rejections - 35 USC § 112, 2<sup>nd</sup> paragraph***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-2 and 4-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The reagents and compounds used in the process steps should have proper antecedent basis. For example, the claims are drawn to "aldehydes." This is incorrect. It should read "an aldehyde" in the first instance and in the following instances read "the aldehyde." Note that it is singular, rather than plural.

Claims 4, 5, 6, and 7 recite the limitations "aldehyde," "enal hydrogenation process," "homogenous hydroformylation catalyst," and "the olefin composition." There is insufficient antecedent basis for these limitations in the claim.

In particular, please note the following indefinite terms:

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In claim 1, the terms aldehydes, olefin compositions, αolefins, olefins, synthetic gas, and the hydroformylation mixture are indefinite. See Claim 1, lines 1-4, 7, 9-11.

In claim 2, the terms “in the” are indefinite. See Claim 2, lines 2 and 3.

In claim 4, the terms hydrogen containing offgases, aldehyde and enal hydrogenation process are indefinite. See claim 4, lines 1-2.

In claims 5 and 6 the term “the homogenous hydroformylation catalyst” are indefinite. See claims 5 and 5 line 2.

In claims 5 and 6, the term “among the groups” are indefinite. See claims 5 and 6, definition of D.

In claim 7, the term “the olefin composition” is indefinite. See claim 7, line 1.

Notes that the above examples may not encompass all the indefinite terms, appropriate correction is required to place the claims in proper form.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining



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obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bohnen et al., WO 02/068371.

Claims 1-4 of Applicant's instant elected is directed to a method for the continuous production of aldehydes comprising between 5 and 21 carbon atoms, by the isomerising hydroformylation in a homogenous phase of olefin compositions comprising between 4 and 20 carbon atoms and containing .alpha.-olefins and olefins with internal double bonds, by means of a synthesis gas, in the presence of a homogeneous rhodium catalyst that is complexed with an organophosphorus ligand containing oxygen atoms and/or nitrogen atoms and a free ligand. .

*Determination of the scope and content of the prior art (MPEP § 2141.01)*

Bohnen teaches a method for the continuous production of aldehydes, by hydroformylation in a homogenous phase of olefin compositions, by means of a synthesis gas, in the presence of a homogeneous rhodium catalyst that is complexed with an organophosphorus ligand containing oxygen atoms and/or nitrogen atoms and a free ligand.

*Ascertainment of the difference between the prior art and the claims (MPEP § 2141.02)*

The difference between the prior art of Bohnen and the instant claims is that the prior art contains different molar ratios of the gas in the process.

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*Finding of prima facie obviousness - rationale and motivation (MPEP § 2142-2413)*

One skilled in the art would have found the claimed process prima facie obvious because the instantly claimed process and the process in Bohnen are describing the same process, i.e. the production of aldehydes via hydroformulation, wherein a rhodium catalyst is complexed with an organophosphorus ligand.

It is well established that change in temperature, concentration, or both is not a patentable modification in the absence of unexpected results which is different in kind and not degree. In re Aller, 105 USPQ 233. In addition, discovery of an optimum value of a result effective variable is not patentable if such discovery is within skill in the art. A prima facie case of obviousness may be rebutted in optimizing a variable only when results are unexpectedly good. In re Boesch, 205 USPQ 215. Therefore, the claimed process is prima facie obvious in light of the prior art unless applicant can show that the difference in molar ratios of the gas results in unexpectedly good results.

The instant obviousness rejection is based on the similar reaction steps of the process. The difference in the molar ratio of the gas is viewed as mere experimentation. Absent unexpected results, the process of claims 1-4 and 7 is obvious in view of Bohnen

***Telephone Inquiry***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susannah Chung whose telephone number is (571) 272-6098. The examiner can normally be reached on M-F, 8am-5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on (571) 272-0699. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Susannah Chung/  
Examiner, Art Unit 1626